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MANITOBA'S FRESH WATER FISHING INDUSTRY 1/

Prepared by Stewart E. McMillin  
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## ECONOMIC IMPORTANCE OF THE INDUSTRY

Manitoba is Canada's leading province in the production of fresh water fish. In 1945/46 the value of fish marketed from Manitoba waters was approximately \$5,344,000. The Government Employment Service is claiming that Winnipeg is the greatest fresh water fish distributing center in the world. Its fishermen have more than 27,800 square miles of lakes and streams where there is good fishing and the province's five fish hatcheries distribute annually some 250,000,000 fingerlings.

The economic importance of the fishing industry in Manitoba materially affects the welfare of the citizens of the province. There is an annual cash income for Manitobans of up to five million dollars exceeded last year from the sale of fish. A production of nutritious food usually exceeding 30 million pounds each year not only adds to the local food supply, but provides a large export business. To bring about this production 6,500 Manitobans are now employed. As many more find employment in the various industries subsidiary to fishing. The foregoing applies to commercial fisheries, but the fishery resource of Manitoba has a tourist and recreational value inasmuch as good fishing (angling) is one of the most important tourist attractions the province possesses. Its fisheries are peculiarly valuable inasmuch as they produce an annual harvest of food without any effort on the part of the reaper to seed the crop. Fisheries, if properly managed, will reseed themselves year after year providing the capital stock is not depleted and ecological conditions changed by man and made unsuitable for fish life.

Those who live by fishing must be hardy and resourceful citizens, quick thinking in meeting the many emergencies which often occur in their hazardous calling. They are usually independent, industrious, and their occupation calls for a large amount of initiative. The fishermen, in general, are progressive and prosperous and in times of depression less troubled by exterior conditions than people in many other industries.

The Supervisor of Fisheries states that some 90 percent or slightly more of the fish is exported to markets of the United States, principally in frozen form. Fishing is full of hazards, especially in unusually warm winter periods, when equipment sometimes breaks through the ice, or in times of blizzards. The product must be in top form if it is to command a good price on the market. Values in New York have varied between 12¢ a pound or less to 45¢ a pound and, in the case of the famous smoked goldeye, this is now bringing 57¢ per pound.

The investments in equipment in the industry, consisting mainly of vessels, barges, skiffs and canoes and nets, with the respective wharves, ice houses and smoke houses, are listed at approximately \$2,000,000. On top of this, however, there are licenses, leases, the value of tractors, horses, airplanes and dogs used in the freighting of fish.

## COMPANIES, PERSONNEL, EQUIPMENT, METHODS OF FISHING

Companies: Some 12 or 15 companies, all in Winnipeg, pack and deal in fish, principally for the United States markets. A few of these are newcomers to the field and are not yet firmly established. The following are said to be the leaders and those which handle the great bulk of the business:

Booth Fisheries Canada Co. Ltd., King and Sutherland Streets.

\*Keystone Fisheries Limited, 404 Scott Block.

Manitoba Fisheries Limited, 303 Owena Street.

Northern Lakes Fisheries Co. Ltd., 400 Lombard Building.

Canadian Fish Producers Limited, 311 Chambers Street.

Selkirk Fisheries Limited, 228 Curry Building.

Armstrong-Gimli Fisheries Ltd., 807 Great West Permanent Building.

Viking Fisheries Limited, 302 Great West Permanent Building.

Mid-Central Fish Company, 430 King Street.

In addition to the foregoing, the three following concerns manufacture smoked, spiced, pickled and marinated fishes:

The Chicago Brand Fish Products, 358-360 Flora Avenue.

Independent Fish Company Limited, 941 Sherbrooke Street.

Booth Fisheries Canada Company Limited, 804 Trust and Loan Building.

Personnel: Fish dealers usually finance fishermen and traders who, in turn, finance individual fishermen and recover their money through the purchase of the production. Most of these fishermen farm in the vicinity of the lake and fish during their slack seasons or, perhaps, during the winter months only. Others are full-time fishermen. A large percentage, especially around Lake Winnipeg, are Icelanders to whom fishing in any weather seems to be second nature. Many of these men are said to retire in comfort on their earnings as fishermen.

There is a recently formed Manitoba Fishermen's Association, of which the present representative is Mr. Adam Borsk. In a statement issued to the press a few days ago, he alleged that there is no secret of the circumstances of a monopolistic combine on Lake Winnipeg, especially in the whitefish area. "This combine," he says, "has actually been supported by the Department of Game and Fisheries because of the nature of issuing licenses and the regulations that govern the license holders." He further explained that for some time the Manitoba Fishermen's Association has been dissatisfied with the treatment which the fishermen of Manitoba have received from the exporting fish companies and the Department of Game and Fisheries. The Manitoba Fishermen's Association has received an official invitation from the Honorable J. T. Phelps, Saskatchewan Minister of Natural Resources and Industrial Development, to participate in an inter-provincial marketing organization.

Equipment: Gill nets, motorboats in summer, skiffs in the fall, tractors, trucks, horses and dogs in the winter are required. Frequently, the cold weather will drive the men to seek shelter for a day or more. When this happens, nets cannot be tended and the fish caught in the nets will be found dead when cleared. This condition deteriorates the value of the catch to such an extent that fishermen will brave all but the bitterest weather to tend to their nets.

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\* The Perfection Net and Twine is a subsidiary of Keystone Fisheries Limited, interested in importing gill nets and twine.

In the province there are 20 boats powered by steam or diesel, including barges used as carriers, together with 204 gas-powered heavy-duty boats licensed for commercial fishing. Boats are valued at about \$310,000. The present estimate of the total value of inventoried commercial fishing equipment in the province is about \$2,000,000. Apart from dock facilities, very little equipment is owned by the commercial fisheries. Most of it is owned by "packers", the men who hire the crews and clean and pack the fish. The companies contract with the packers for the entire catch at so-much per pound, and in recent years have acted more and more as fish brokers rather than operators.

A statement follows to show the number of fishermen employed and equipment used during the year 1945/46:

|                           | <u>Number</u> | <u>Value</u>     | <u>Men Employed</u> |
|---------------------------|---------------|------------------|---------------------|
| Winter Fishermen          |               |                  | 3,481               |
| Boats & Barges            |               |                  |                     |
| (Steam, Gas & Diesel)     | 20            | \$ 126,200       | 91                  |
| Skiffs & Canoes           | 2,169         | 85,915           | 2,181               |
| Gasoline Vessels          | 204           | 183,376          | 767                 |
| Gill Nets                 | 109,811       | 1,296,837        |                     |
| Hoop Nets                 | 15            | 590              |                     |
| Lines                     | 34            | 170              |                     |
| Piers & Wharves           | 77            | 32,600           |                     |
| Ice Houses & Coolers      | 150           | 182,350          |                     |
| Small Fish & Smoke Houses | <u>171</u>    | <u>77,662</u>    |                     |
|                           |               | <u>1,985,700</u> | <u>6,520</u>        |

Methods of Fishing: Fishing through the ice in winter accounts for the greater part of the season's catch, the men chopping holes and lowering nets. As they work through the most bitter of Manitoba's weather, the nets are raised once a day and the men who remove the fish wear woolen mittens which they immerse immediately in water so that the ice which forms makes a protection against the wind. Faces, hands and feet often freeze and life on the ice is anything but comfortable. The fish camps are on the borders of lakes and the fish are transported to rail-heads by tractor train where they are packed and shipped. On the smaller lakes, many men frequently fish in groups of two or four, using dogs for transportation, working close to the shoreline and coming in every night. Husky dogs are invaluable. Canoe and highway patrols are maintained while snow-planes, snowmobiles and dog teams are always in operation.

In both summer and winter fishing the gill net is used. Usually in the larger lakes the licensee is permitted to use over one mile of gill net (2,000 yards). In Lake Manitoba and Lake Winnipegosis, 4,000 yards is permitted. In northern lakes where commercial fishing has been more recently permitted, a small yardage is used, in general, 1,000 to 1,500 yards of gill net. The lifting and clearing of fish from such a great yardage is a lot of work and the fishermen is usually hustling to keep his nets attended on time. The gill net is used primarily because it takes a certain size of fish. The legal net is planned to take mature fish which have spawned at least once, and also fish which are of a suitable market size.

Setting the gill net from the boat, of course, is a simple matter, but setting nets under the ice is a more complicated process. The fisherman first cuts a hole in the ice straight through, removing from the hole all the ice chips so that the water is clear and nothing left at the edge of the hole to catch in the net twine and tear it. He then pushes the jigger down through the hole in the ice and sets it to go in the direction in which the net is to be set. The jigger is a simple mechanical apparatus designed to carry the draw-line or running-line of the net under the ice. By a succession of sharp jerks on the line a lever is repeatedly pulled back on the jigger which lever in turn operates a kicker with a sharp steel point on the end which catches on the lower surface of the ice and shoots the jigger ahead. When the jigger has been run to the full length of the net the second hole is cut through the ice above the jigger. The running line is untied from the jigger and pulled up through the ice. If more than one net is to be set the jigger remains under the ice during the setting of the net. It is pushed ahead, under the ice sufficiently far to be out of the way of the net as it is being set. With part of the running line under the ice, between the two net holes and two ends of the line on the top of the ice, the net which is to be set can be made fast to one of the ends of the running line. The helper then pulls the free end of the line, the fisherman at the same time feeding the net into the "basin-hole" as the hole in the ice is called. When the whole of the net is under the ice the end is untied from the running line and both net ends are tied to the "anchor-line". Anchor-lines are placed at each "basin-hole". They have a stone at one end which carries one end of the line to lake bottom, the other end being made fast to a stake on top of the ice. The gill net is thus set. It has cedar wood corks on one line and leaden sinkers on the other line. In this way, when set, it stands on lake bottom like a chicken wire fence, ready to enmesh any fish which may attempt to thrust its nose through the fine cotton or linen meshes of the net. When the net has been under the ice for one or more nights it is "lifted". The lifting process is simply a reversal of the setting process, i.e. the two holes are cut through the ice, the one end of the net fished up untied from the anchor line and tied to the draw-line or running-line which latter is free or coiled on top of the ice. The fisherman unhooks the other end of the net and pulls it out of the "basin-hole", at the same time clearing the fish from it. When the net is pulled completely on to the ice the draw-line takes its place underneath the ice. This lifting and setting of net is the daily occupation of the winter fisherman.

#### FISHING SEASONS AND SEASONAL PRODUCTION

Seasonal Characteristics: The commercial fishing industry is a year-round enterprise, but requires for its greatest effectiveness that some kinds of fish be taken during the winter months. The Manitoba climate naturally divides the commercial fishing into two operations, the one being summer fishing in open water and the other winter fishing through the ice.

The summer fishing is also divided into two - the first being the early summer season such as the whitefish fishing season, at the north end of Lake Winnipeg which opens the first Monday in June and closes on the last Saturday in July. Then there are fall fishing seasons on Lakes Winnipeg, Winnipegosis, and some of the northern lakes. These seasons are intended

for the production of pickerel, over eight million pounds of which are produced annually in the Province. During the open water fishing seasons fishermen have to use boats and the freighting from outside points is done in the main with Diesel tugs. Thus, the summer fishermen are usually good sailors and navigators. In the winter season the fishermen work on the ice. Their day usually begins before dawn and they carry on quite often until after nightfall. In some instances the fishermen live in camps which are transported to points on the ice in the vicinity of their fishing operations. In other cases the fishermen have camps on shore and work out on the lake.

The winter fishing seasons usually begin from the 11th to the 15th day of November, and continue on until the limit set for the lake is taken, or, in most cases, until the middle of March. Most of the fishing in the winter season permit the fishermen to take all the fish he is able to catch, but there is an overall limit of production set for most of the commercially fished lakes. The limits are set to ensure sufficient seed stock remains in a lake after the allotted poundage of fish has been caught. As soon as the limit for a lake is taken, all fishermen partaking in the operation must discontinue fishing. Checking the limit is fairly easy on small lakes which have but one road out. On the larger lakes such checking is a full time job.

In the summer-fishing operations on Lake Winnipeg and the fall-fishing operation on Lake Winnipegosis the fisherman is limited as to individual production. In this way each fisherman is permitted to take his allotted poundage, and no more. The overall of the fishermen's allotted poundages equals the total limit of production for the lake. This restriction was imposed with a great deal of opposition from the fishermen when it was first introduced. Now, in general, the fishermen are in favor of it, as it was found that a fishing operation with the element of competition removed proved to be much more economical than the old style of summer fishing when every fisherman put forth every effort at his disposal to increase his catch of fish.

Production by Seasons: The following table is prepared to show seasonal production respectively by summers and winters and by the combined summer and winter for the last two fishing years. These fishing years, often called the fiscal years in this report, are from May 1st to the following April 30th.

|                  | <u>Quantity<br/>in lbs.</u> | <u>Value to<br/>Fishermen</u> | <u>Value<br/>as Marketed</u> |
|------------------|-----------------------------|-------------------------------|------------------------------|
| Summer 1944      | 10,344,600                  | \$ 223,580                    | \$ 1,288,537                 |
| Summer 1945      | 14,049,100                  | 1,725,252                     | 2,290,750                    |
| Winter 1944/45   | 17,048,400                  | 1,692,957                     | 1,946,190                    |
| Winter 1945/46   | 20,195,000                  | 2,308,996                     | 3,052,820                    |
| Summer 1944 )    | 27,393,000                  | 2,516,537                     | 3,234,727                    |
| Winter 1944/45 ) |                             |                               |                              |
| Summer 1945 )    | 34,244,100                  | 4,034,248                     | 5,343,570                    |
| Winter 1945/46 ) |                             |                               |                              |

## METHODS OF PACKING, PROCESSING AND SHIPPING

Packing: The earliest commercial fishing was done in the winter time and the product was the naturally frozen fish. A large portion of the more or less inaccessible areas of the province are fished in a similar way today, i.e. the fish caught are naturally frozen on the ice and packed as frozen fish in winter fish boxes. In the last twenty-five years, however, "fresh" or unfrozen fish has been produced during the winter fishing season in most of the waters located within reasonable distance of the railway. These fresh fish are packed similarly to summer caught fish, that is they are weighed, usually in 50 pound lots, allowing three pounds for shrinkage, and are packed with chipped ice in summer fish boxes. Even in this simple process improvements have come into practice during the last ten or fifteen years. Chipped ice packed in a wooden box without any other protection melts fairly easily. When the box is lined with waxed paper and the chipped ice and fish covered with waxed paper the ice lasts much longer, and of course, the packed fish keeps cooler and in better condition. Nowadays almost all fish packed in summer boxes has a waxed paper lining in the boxes. In Manitoba, for packing fish natural ice is generally used; that is the ice which freezes on lakes or rivers is cut and hauled to be packed within ice-houses. There is, however, an artificial ice being made which, due to the addition of salt and other chemicals to the brine, has a lower melting temperature and so will keep fish at 3 to 4 degrees lower temperature. This is the flake ice process. Some of the brines used in making this flake ice are patented. The Pacific Biological Station holds patents for flake ice brines. Flake ice will keep fish at 30 degrees instead of the 34 degrees or 35 degrees F. with natural ice. These few degrees make a great difference in the quality of the fish after it has been kept for four or five days and with the use of flaked ice a better fish product can be put on the market. Flake ice usually has an antiseptic ingredient incorporated in it which prevents the growth of bacteria. In the marketing of fish, every day counts that elapses between the time the fish is taken out of the water, and brought to the consumer. The object of the trade is to place the fish in the consumer's hands with as little delay as possible. To this end improved transportation methods such as trucks in winter instead of horse teams, and occasionally the use of the aeroplane has been a factor in reducing the time lapse. During war time emphasis has possibly been placed on quantity production rather than quality production. When markets assume the usual peace time atmosphere it will become more and more necessary to place emphasis upon the quality of the product, rather than the quantity. When this happens probably greater efforts will be made to place a fresh caught fish on the retail fish markets.

Processing and Shipping: In the summer transportation of fish which is often by barge and tug or by Diesel tug, improvements may be made with the installation of freezing plants so that the holds of the tugs or barges may be kept quite cold. This will make for better handling, as the fish will be kept in a 30 degrees F. temperature, and will thus come to market in better condition. Refrigeration is one of the important points in quality production. Much of the summer caught fish is now filleted and frozen and passed to the consumer as a frozen fillet. Good refrigeration is of great importance in this trade as the fillet must be quick frozen at low temperatures

and held at the correct temperature until it finally reaches the hands of the cook. For best results the frost should be kept in the frozen fish until it is ready for the oven or pot. Thus modern merchandising methods with refrigeration in display cabinets are a great help in improving the quality of fish. The popularity of the goldeye has made a smoked fish industry in Winnipeg. Two large processing firms regularly smoke goldeyes for the local trade. Unfortunately, the supply of this species of fish does not equal the demand and there are times when smoked goldeyes cannot be obtained.

By-Products: Another processing industry has developed in recent years, that is the preparation of different herring packs. These are the marinated and anchovy styles where the herring is salted and spiced and attractively packed in glass jars. The principal firms doing this work have been indicated earlier in this report.

#### GROWTH OF PRODUCTION

During the past fifteen years the production of fish for commercial purposes has practically doubled while the market value has increased by some four and a half times. A table follows which shows this increase through the years:

| <u>Year</u> | <u>Quantity<br/>in Lbs.</u> | <u>Value to<br/>Fishermen</u> | <u>Value as<br/>Marketed</u> |
|-------------|-----------------------------|-------------------------------|------------------------------|
| 1931/32     | 17,383,200                  | \$ 812,456                    | \$ 1,121,269                 |
| 1932/33     | 18,774,500                  | 694,976                       | 1,051,447                    |
| 1933/34     | 21,990,500                  | 923,036                       | 1,306,020                    |
| 1934/35     | 22,020,800                  | 952,116                       | 1,329,814                    |
| 1935/36     | 24,967,300                  | 1,163,446                     | 1,570,354                    |
| 1936/37     | 28,539,400                  | 1,291,909                     | 1,618,508                    |
| 1937/38     | 28,918,200                  | 1,384,206                     | 1,815,347                    |
| 1938/39     | 34,078,600                  | 1,273,939                     | 1,769,474                    |
| 1939/40     | 28,359,200                  | 1,287,110                     | 1,682,689                    |
| 1940/41     | 38,885,600                  | 2,193,876                     | 2,754,254                    |
| 1941/42     | 36,810,800                  | 2,551,272                     | 3,274,887                    |
| 1942/43     | 33,678,800                  | 2,959,921                     | 3,843,331                    |
| 1943/44     | 33,413,900                  | 3,536,378                     | 4,522,203                    |
| 1944/45     | 27,393,000                  | 2,516,537                     | 3,234,727                    |
| 1945/46     | 34,244,100                  | 4,034,248                     | 5,343,570                    |

#### SOURCES OF PRODUCTION

The geological changes in ages past are responsible for the formation of Manitoba's large lakes. In the province large bodies of water remain of the huge glacial basin, Lake Aggasiz. Lake Winnipeg, the largest of these is 9,460 square miles in area and is the ninth largest freshwater lake in the world. It is a rich producer of the primary fish foods and in consequence a heavy producer of edible fish. Lake Winnipegosis, Manitoba and Dauphin in the southern part of the province, are also large producers of commercial fishes. All fish companies make regular returns in both poundage

and value to the Provincial Department of Mines and Natural Resources.

In the southern part of the northern area of the province there are a number of lakes together with the Saskatchewan River which produce over three million pounds of fish annually. In the northern part of the province is situated Southern Inidan Lake and to the north-east, God's Lake, which are both large lakes and important contributors to the fishery production of the province. The combined annual production of these two lakes approaches one and one-half million pounds of choice fish.

Production of Principal Lakes: Some 67 of the 79 main lakes and streams were fished commercially, but three of these - Lakes Winnipeg, Manitoba and Winnipegosis - together furnished 81.72 percent of the quantity and 81.88 percent of value marketed, as follows:

|                                   | <u>Pounds</u> | <u>%</u> | <u>Market Value</u> | <u>%</u> |
|-----------------------------------|---------------|----------|---------------------|----------|
| Winnipeg (9,460 square miles)     | 16,330,322    | 47.69    | \$ 2,616,466        | 48.96    |
| Manitoba (1,187 square miles)     | 5,952,800     | 17.38    | 1,110,869           | 20.79    |
| Winnipegosis (2,086 square miles) | 5,700,900     | 16.65    | 648,228             | 12.13    |
|                                   | 27,984,022    | 81.72    | 4,375,563           | 81.88    |
| 66 others                         | 6,260,078     | 18.28    | 968,007             | 18.12    |
| Totals                            | 34,244,100    | 100.00   | 5,343,570           | 100.00   |

In view of the importance of these three lakes to commercial fishing a breakdown of their activities follows. A full list of the lakes with their respective productions and values appears on pages 12 and 13.

Winnipeg: This lake is conceded to be the greatest whitefish territory in any province of the Dominion, and yet its yield of two other fishes is heavier. Its commercial production by varieties of fish is shown here during the past two completed years.

|                 | <u>1944/45</u><br><u>lbs.</u> | <u>1945/46</u><br><u>lbs.</u> |
|-----------------|-------------------------------|-------------------------------|
| Pickeral        | 4,787,000                     | 5,032,900                     |
| Saugers         | 5,006,200                     | 3,802,100                     |
| Whitefish       | 2,356,800                     | 2,721,200                     |
| Tullibee        | 484,500                       | 2,294,300                     |
| Pike            | 734,000                       | 998,900                       |
| Suckers         | 144,100                       | 844,800                       |
| Bass            | 112,400                       | 337,900                       |
| Perch           | 109,300                       | 199,100                       |
| Goldeyes        | 17,100                        | 3,300                         |
| Sturgeon        | 700                           | 1,100                         |
| Sturgeon Caviar | -                             | 22                            |
| Catfish         | 1,200                         | 400                           |
| Bullheads       | 100                           | -                             |
| Total           | 13,753,500                    | 16,330,322                    |

Increases in production and values of Lake Winnipeg fisheries last year over the previous year were 2,576,822 pounds, \$798,017 paid to fishermen and \$910,175 in market values. Boats and skiffs employed on this big lake numbered 1,872, and men, 2,403.

Manitoba Lake: Saugers, tullibee, pickerel, pike and perch have been principally yielded by this lake. A comparative table for the past two completed fishing years (May 1st to April 30th) shows the respective catches for each fish:

|           | <u>1944/45</u><br><u>lbs.</u> | <u>1945/46</u><br><u>lbs.</u> |
|-----------|-------------------------------|-------------------------------|
| Saugers   | 1,011,300                     | 1,620,400                     |
| Tullibee  | 375,600                       | 1,482,200                     |
| Pickerel  | 1,167,000                     | 1,276,000                     |
| Pike      | 380,500                       | 717,300                       |
| Perch     | 425,100                       | 499,400                       |
| Suckers   | 717,200                       | 342,500                       |
| Whitefish | 600                           | 14,100                        |
| Catfish   | -                             | 100                           |
| Carp      | 400                           | 400                           |
| Goldeyes  | -                             | 400                           |
|           | <u>4,077,700</u>              | <u>5,952,800</u>              |

Increase in annual production - 1,875,100 pounds.

The total market value was \$1,110,869 or 20.79% of all. The men employed for the fishing on this lake numbered 762.

Winnipegosis: The yield of fish from this lake closely approached that of Lake Manitoba, amounting to 5,700,900 pounds. The market value, however, was much less, as the yield of goldeye, pickerel and tullibees fell off, while that of the lowly suckers, known locally as mullets, gained heavily. Just of late, some of the companies have been filleting this common fish to pack for the market, which, if it proves acceptable as a fair pan fish for the United States market, may put Winnipegosis ahead of Manitoba. The fish is sold as caught at only  $2\frac{1}{2}$  cents a pound or a little more. Filleted, after cleaning, it is priced at 12 cents and it may be possible to dispose of most of it prepared in this way. The following is a table of Winnipegosis fish taken commercially during the past two fishing years:

|           | <u>1944/45</u><br><u>lbs.</u> | <u>1945/46</u><br><u>lbs.</u> |
|-----------|-------------------------------|-------------------------------|
| Suckers   | 1,461,100                     | 2,209,800                     |
| Pickerel  | 2,296,800                     | 1,752,500                     |
| Tullibee  | 1,288,200                     | 760,000                       |
| Pike      | 595,300                       | 616,200                       |
| Saugers   | 127,100                       | 202,700                       |
| Goldeyes  | 200,300                       | 90,000                        |
| Perch     | 84,100                        | 54,000                        |
| Whitefish | 9,300                         | 15,700                        |
| Total     | <u>6,062,200</u>              | <u>5,700,900</u>              |

A decrease in quantity is shown, but the values to fishermen and as marketed were respectively \$22,846 and \$75,728. Sixty-one boats and skiffs were employed on the lake, and, including winter time operations, 598 men.

PRODUCTION BY ALL SOURCES

(May 1, 1945 - April 30, 1946)

| <u>Lake</u>                | <u>cwt.</u> | <u>Value to<br/>Fishermen</u> | <u>Value as<br/>Marketed</u> |
|----------------------------|-------------|-------------------------------|------------------------------|
| Winnipeg (9,460 sq.miles)  | 163303      | \$ 2,104,586                  | \$ 2,616,466                 |
| Manitoba (1,187 " " )      | 59528       | 842,429                       | 1,110,869                    |
| Winnipegosis (2,086 " )    | 57009       | 465,472                       | 648,228                      |
| God's                      | 8760        | 74,648                        | 143,648                      |
| Southern Indian (1,200 " ) | 8120        | 40,114                        | 114,923                      |
| St. Martin                 | 5350        | 74,786                        | 88,395                       |
| Dauphin                    | 4227        | 48,633                        | 60,380                       |
| Moose                      | 4447        | 29,759                        | 56,411                       |
| Winnipeg River             | 378         | 31,716                        | 40,274                       |
| Walker                     | 1832        | 14,089                        | 30,917                       |
| Sissipuk                   | 2323        | 17,109                        | 29,178                       |
| Cormorant                  | 1835        | 17,345                        | 24,539                       |
| Barrier                    | 1040        | 15,871                        | 22,635                       |
| Herb                       | 1572        | 16,094                        | 19,675                       |
| Reed                       | 1200        | 12,744                        | 18,039                       |
| Lake of the Woods          | 908         | 15,444                        | 16,970                       |
| Red Sucker                 | 942         | 10,784                        | 16,647                       |
| Kississing                 | 1246        | 7,194                         | 15,591                       |
| Cedar                      | 1368        | 7,019                         | 15,359                       |
| Williams                   | 865         | 9,284                         | 15,309                       |
| Island                     | 875         | 5,338                         | 13,989                       |
| Pakwa                      | 833         | 7,865                         | 13,658                       |
| Setting                    | 705         | 10,542                        | 13,023                       |
| Nelson River               | 136         | 9,784                         | 11,998                       |
| Goose                      | 485         | 10,983                        | 11,858                       |
| Herblet (Little Herb)      | 459         | 9,176                         | 10,823                       |
| Kisseynew                  | 565         | 7,164                         | 10,346                       |
| Saskatchewan River         | 800         | 4,788                         | 10,271                       |
| Granville                  | 899         | 5,419                         | 10,075                       |
| Whiskey Jack               | 1290        | 8,285                         | 9,929                        |
| Russell                    | 562         | 7,136                         | 9,706                        |
| Partridge Crop             | 608         | 7,582                         | 9,490                        |
| Halfway                    | 511         | 7,073                         | 8,731                        |
| Waterhon                   | 1113        | 7,117                         | 8,454                        |
| Talbot                     | 556         | 2,784                         | 7,907                        |
| Landing                    | 552         | 5,760                         | 7,464                        |
| Cuddle                     | 665         | 5,213                         | 6,526                        |
| Wintering                  | 326         | 4,435                         | 5,518                        |
| Playgreen                  | 289         | 4,175                         | 5,501                        |
| Rocky                      | 264         | 3,675                         | 4,659                        |
| File                       | 180         | 3,886                         | 4,555                        |
| Naosap                     | 182         | 3,822                         | 4,365                        |
| Cross (Saskatchewan River) | 219         | 2,756                         | 4,287                        |

| <u>Lake</u>                 | <u>cwt.</u> | <u>Value to<br/>Fishermen</u> | <u>Value as<br/>Marketed</u> |
|-----------------------------|-------------|-------------------------------|------------------------------|
| Little Clearwater           | 197         | \$ 1,780                      | \$ 3,592                     |
| Lake St. George & St. David | 340         | 3,106                         | 3,456                        |
| Iskwasum                    | 160         | 2,444                         | 3,184                        |
| Paint                       | 230         | 2,385                         | 3,089                        |
| Fay                         | 95          | 1,741                         | 2,081                        |
| Egg                         | 106         | 1,781                         | 1,963                        |
| Yawingstone                 | 140         | 1,090                         | 1,876                        |
| Pukatawagan                 | 22          | 1,505                         | 1,828                        |
| Florence                    | 103         | 1,445                         | 1,793                        |
| Notigi                      | 77          | 577                           | 1,707                        |
| Grassy                      | 61          | 1,200                         | 1,539                        |
| Kiski                       | 205         | 1,500                         | 1,509                        |
| Saskatchewan River          | 90          | 1,189                         | 1,478                        |
| Dolomite                    | 78          | 1,180                         | 1,378                        |
| Mud (Sipiwesk)              | 117         | 891                           | 1,351                        |
| Schist                      | 71          | 840                           | 1,075                        |
| Wedge                       | 38          | 695                           | 793                          |
| Simonhouse                  | 52          | 610                           | 746                          |
| Buzz                        | 33          | 407                           | 510                          |
| Duck (Sipiwesk)             | 38          | 334                           | 481                          |
| Squall                      | 29          | 355                           | 476                          |
| Sipiwesk                    | 28          | 123                           | 265                          |
| Pikwitonei                  | 7           | 95                            | 121                          |
| Clerk                       | 3           | 50                            | 60                           |

#### SPECIES OF FISH TAKEN IN COMMERCIAL FISHING OPERATIONS

The Two Favorites: The principal species of fish taken on commercial fishing operations from Manitoba lakes are listed according to their importance on a poundage basis for the fiscal year 1945/46. Pickerel, saugers, whitefish, suckers, pike, tullibee, perch, goldeyes, bass (freshwater drum), lake trout, sturgeon, catfish, carp, bullheads. Of the foregoing varieties the Manitoba goldeye is probably the most famous fish produced in Manitoba, as travellers are often served this delicacy on dining cars and the "Winnipeg goldeye" as it is generally called, is favorably known over a very large area of North America. "Selkirk whitefish", being the whitefish produced from Lake Winnipeg, is also a very well known product. It is eagerly sought after by the wholesale fish trade. "Selkirk whitefish" are particularly suited for smoking and this is the form in which the fish trade prepares them for the consumer.

Difficulties of Restocking: The goldeye, whitefish and lake trout are species which may easily become depleted. This may be in part because of their peculiar spawning habits. Very little is known at the present time of the spawning act of goldeye. All efforts to date to artificially inseminate the eggs have been unsuccessful. Whitefish and lake trout both spawn in the fall of the year and their eggs lie on the lake bottoms and are thus a very easy prey for predators. The long incubation period of the eggs of these two species places them at a definite disadvantage with spring spawning fish and thus places a severe handicap on their reproductive capacity. Recog-

nizing this fact the Department has closed all the lake trout producing lakes which were fished to the point of semi-depletion. These lakes are Athapapuskow, Clearwater and the three Cranberry Lakes. A few years without commercial fishing will probably restore the one time dense population of lake trout which all of these lakes possessed.

The Catch by Species: The following table is designed to show the total production of fish in Manitoba Province according to species and the value thereof in the order of their importance, during the last two fishing years:

| SPECIES      | QUANTITY IN LBS. |            | VALUE TO FISHERMEN |           | VALUE AS MARKETED |           |
|--------------|------------------|------------|--------------------|-----------|-------------------|-----------|
|              | 1944/45          | 1945/46    | 1944/45            | 1945/46   | 1944/45           | 1945/46   |
|              |                  |            | \$                 | \$        | \$                | \$        |
| Pickereel    | 9,027,600        | 9,529,800  | 954,839            | 1,629,058 | 1,246,975         | 2,110,721 |
| Whitefish    | 4,108,200        | 5,459,600  | 480,962            | 818,398   | 677,037           | 1,144,654 |
| Saugers      | 6,160,800        | 5,652,400  | 604,862            | 789,619   | 683,134           | 1,015,555 |
| Tullibee     | 2,397,700        | 5,236,300  | 147,192            | 201,952   | 197,140           | 252,995   |
| Pike         | 2,186,300        | 3,168,500  | 124,031            | 239,493   | 171,220           | 318,879   |
| Perch        | 623,800          | 770,000    | 76,210             | 142,401   | 86,308            | 183,866   |
| Suckers      | 2,389,800        | 3,631,900  | 60,983             | 102,111   | 81,107            | 177,772   |
| Sturgeon     | 25,100           | 53,500     | 16,139             | 41,363    | 21,744            | 51,105    |
| Sturgeon     |                  |            |                    |           |                   |           |
| Caviar       | -                | 1,500      | -                  | 3,018     | -                 | 4,527     |
| Trout        | 104,900          | 193,800    | 11,309             | 22,589    | 18,913            | 31,315    |
| Bass         |                  |            |                    |           |                   |           |
| (Sheepshead) | 112,400          | 337,900    | 5,359              | 22,705    | 8,710             | 26,084    |
| Goldeyes     | 254,100          | 113,700    | 34,379             | 15,059    | 42,129            | 17,950    |
| Carp         | 500              | 94,700     | 40                 | 6,390     | 34                | 8,045     |
| Catfish      | 1,200            | 500        | 180                | 92        | 216               | 102       |
| Bullheads    | 600              | -          | 52                 | -         | 60                | -         |
| Totals       | 27,393,000       | 34,244,100 | 2,516,537          | 4,034,248 | 3,234,727         | 5,343,570 |

Increase in Production - 6,851,100 pounds - 25 percent.

Increase in Value to Fishermen - \$1,517,711 - 60 percent.

Increase in Value as Marketed - \$2,108,843 - 65 percent.

#### CHIEF CHARACTERISTICS OF THE PRINCIPAL COMMERCIAL FISHES IN MANITOBA

Pickereel: The pickerel, or pike perch, has been generally regarded as the second most valuable commercial fish in Manitoban waters, there being from seven to nine million pounds marketed annually. Last year, however, the catch rose to 9,529,800 pounds, and the value to \$2,110,721 or 27.83 percent of the total catch and 37.63 percent of the market value. The fish was taken by gill nets, principally from Lakes Winnipeg, Winnipegosis, Manitoba and Dauphin.

As a game fish the pickerel is highly esteemed also by local anglers. It bites readily at a wide variety of artificial lures or natural baits, and in addition to being a vigorous fighter, is an excellent pan fish.

Pickrel (pike perch) are very destructive to small fish, each one consuming, it is estimated, some two to three thousand small fish annually, including its own young. The growth varies, but in the larger lakes is said to be about six ounces per year for the female and somewhat less for the male. The average size taken is under three pounds, but they have been taken as large as thirteen pounds in Lake Winnipeg. The eggs approximate 45,000 per pound of body weight, spawned usually in April, and given no care by the parent fish. The species is handled in three of the five fish hatcheries in Manitoba, and about 160,000,000 fry are liberated annually.

Whitefish: The common whitefish is found in almost all the lakes of Manitoba. There are hatcheries which do everything possible to replenish the lakes and rivers in order that the supply may be continued. The food of this fish differs greatly in various localities, likewise the quality of the flesh. The growth of whitefish in lakes such as Winnipeg is said to be roughly one-half pound per year, and fish weighing 20 and 25 pounds are reported caught for commercial purposes. However, of late, the take of this fish is of smaller size. At the present time the average weight of whitefish in commercial catches in Manitoba has descended to  $2\frac{1}{2}$  to  $3\frac{1}{2}$  pounds and the bulk of the fish so caught are six to eight years old.

The average number of eggs per fish at spawning time is said to be 25,000 but a large female may produce as many as 150,000 so that the stock of this fish seems likely to remain plentiful.

In the inland fisheries of Canada, the whitefish brings more money to fishermen than any other variety. In Manitoba this was true until recently when the whitefish was displaced by the pickerel, or pike-perch and, more recently, by the sauger. Over 4,000,000 pounds of whitefish are taken annually in the waters of Manitoba, 85 percent which come from Lake Winnipeg. Last year the yield reached 5,459,600 pounds or 15.94%, while the market value was \$1,144,654 or 21.42%. The whitefish taken from Lake Winnipeg are of particularly high quality, and fresh or smoked command good prices on the American market.

As a sporting fish the whitefish has no value, there being no record with the fisheries of a specimen being taken by angling.

Sauger: Sauger took second place in volume and third in market value during the 1945/46 fishing season, with 5,652,400 pounds (16.48 percent) of all, valued at \$1,015,555 (19.01 percent).

This is a slimmer relative of the pickerel, or pike-perch and has a similar distribution in Manitoba waters. It is often confused with the pickerel, but is readily recognized by the presence of scales on the cheeks, which the other fish does not have. The food of this fish is very similar to that of the pickerel (perch-pike) but it does not grow so large, reaching a length of 18 inches and a maximum weight of slightly over two pounds. The sauger matures at 5 years, with a weight of about 12 ounces. In certain lakes, depletion of the pike-perch (pickerel) by intensive commercial fishing has allowed the sauger to increase to such an extent that sauger now is securely in third place in value.

Due to its small average size of less than a pound, the sauger does not occupy a prominent position as a game fish, though taking a baited hook readily.

Pike (Jackfish, Great Northern Pike): In Manitoba this is the most common game fish and is found in all fish bearing streams and lakes to the Arctic. Since one female will produce as many as 200,000 eggs in one season, the supply seems likely to continue. Some 3,000,000 pounds are taken annually by commercial fishermen in Manitoba. If this fish is taken from cold water, the flesh is white, firm and flaky but if taken in warm weather and shallow water, it is inclined to be soft and tasteless. As a consequence, practically all the fishing of this variety is done during the cold months. A variety of this fish known as the muskallunge has been taken by anglers going up to some 75 pounds, but has no other than accidental commercial importance.

Pike, with 3,168,500 pounds (9.24 percent), market value \$313,879 (5.97 percent) was fifth in volume and fourth in value in Manitoba's 1945/46 commercial fishing.

Tullibees: There are many varieties, from the light to the black back, some six species being especially known, however, commercial fishermen recognize but two distinct types. These are common in Lake Winnipeg and Dauphin. The fish is found chiefly in comparatively shallow water where it feeds entirely from plankton. Weight about 2 pounds. The black tullibee is a dry fish, not well adapted to smoking. The light back tullibee has a supplementary diet upon other fish and organisms and, being fat, is well suited for smoking and has considerable market value. This fish is almost entirely free from larval tapeworms so is not subject to criticism sometimes levied against other fish from this part of Canada.

Tullibees took fourth place in production and fifth in market value with 5,236,300 pounds (15.03 percent), valued at \$252,995 (4.73 percent), respectively. During the 1937 season, the Dauphin River Hatchery successfully fertilized whitefish eggs with male tullibee, and tullibee eggs with male whitefish. This knowledge may prove of use later in producing larva-free fish for commerce.

Perch: In the last fishing year - the 1945-46 season which is the subject of the present report - the production of perch (yellow perch) reached 770,000 pounds (2.24 percent) valued at \$183,866 (3.44 percent). At the present time, however, (February 1947) shipments of this fish to foreign markets are gaining, but figures will not be available until early in 1948.

Perch compares very favorably with most other fresh water fishes and commands a good price. However, since the average weight being about half a pound, and not often reaching two pounds in these waters, it is only popular with anglers who demand rapid action and quantity, among the schools in which it moves.

Suckers and Buffalo Fish: Various varieties of these are listed and are caught in considerable quantities by fishermen from many parts of Manitoba. They furnish some commercial exports but, until lately, have seemed likely to reach their full value only as merchandise in fish reduction plants. One of these is planned for the Northern Winnipeg region during the coming autumn and, if it proves a success, is likely to be followed by

two more, one at the narrows of Lake Winnipeg and one in the harbor of Churchill on Hudson Bay. However, just lately, the fish, known locally as "mulletts", which have been selling at 4 $\frac{1}{2}$ ¢ a pound or even as low as 2 $\frac{1}{2}$ ¢ a pound have been exported in the form of mullet fillets at 10¢, 12 $\frac{1}{2}$ ¢ and, on one occasion are known to have brought 14¢ a pound. There are great quantities of these, and possibly the sucker and buffalo fish may come to produce considerable returns. These are frequently as large as 30 pounds in weight.

Sturgeon: The lake sturgeon is still fairly abundant in parts of the lower areas of the Hudson Bay drainage system. It is found in all the large rivers which enter Lake Winnipeg from the east and is very common in the Nelson and Churchill rivers. In Lake Winnipeg it is found among the granite rocks of the eastern shore but is almost absent in the western part, nor is it to be found in Lakes Manitoba and Winnipegosis.

Few of the fish spawn before reaching the age of 20 years, and many not until the age of 30, when they are from 30 to 40 pounds in weight. Few fishes spawn before reaching the age of 20 years, but produce enormous numbers after that. The growth of the sturgeon is probably slower than that of other Manitoba fishes. The largest sturgeon recorded from Lake Winnipeg weighed about 275 pounds, and was taken in the summer of 1941. The female fish has been known to reach a weight of 300 pounds. At first the sturgeon was regarded in Manitoba as having little value. As the American supplies of this fish were depleted, a demand was created for both the flesh and the eggs in the form of caviar. The sturgeon was then so intensively fished that by 1927 it was nearing extinction. The sturgeon fishing was closed, and remained so for ten years. Since reopening this fishing, the yield has been relatively low. The fish may eventually become important again, but hatchery work has not yet become practical for the sturgeon. The small yield of sturgeon last year was 53,500 pounds, valued at \$51,105, while 1,500 pounds of caviar brought \$4,527.

Lake or Salmon Trout: Found principally in North America, from Labrador to Alaska through the North West Territories but fairly common in some areas and abundant in the lakes of Manitoba, north of The Pas. Occasionally, specimens are also taken by commercial fishermen in the northern portion of Lake Winnipeg. The fish normally yields some \$150,000 annually commercially in Manitoba, but fell to \$31,315 last year. The size varies, fish as large as 60 pounds having been taken.

Bass: Manitoba appears to be the northern limit for calico or white bass, as it occurs only in the southern streams such as the Red and Assiniboine Rivers. The rock bass is found much farther north, especially around the narrows of Lake Winnipeg. The size of this fish is rarely as large as one pound but it offers a favorite sport for angling. Small mouth and large mouth black bass are quite common in Southern Manitoba and while of great interest to the angler, they are consumed locally and exported to only a relatively small extent.

Sheepshead (Drum): Until recently some 20,000 pounds of these were marketed commercially each year but the export seems to be increasing rapidly. The average size of the fish is about 6 pounds though reaching as

much as 50 pounds. It is much more popular as a food fish in the United States than it is in Canada. Of late (during the current year - 1946/47) there have been heavier exports.

Goldeye: While goldeye is distributed from the Ohio River and northward in the Province of Manitoba, it is found chiefly in Lakes Winnipeg, Winnipegosis and Dauphin, and is almost entirely absent from Lake Manitoba. The average size of goldeye for commercial use is about 12 inches in length but less than 1 pound in weight, although specimens of twice this weight and some 16 inches in length are sometimes taken. The average size of this fish from Lake Winnipegosis is slightly greater than that of the Lake Winnipeg. This fish is difficult to propagate by means of hatcheries, and, unlike most other local fish, does not spawn each year after maturity.

The commercial catch of the goldeye is not large, having been in the neighborhood of 300,000 pounds annually, which fell to only 113,700 pounds last year. This fish is regarded as a great delicacy in the restaurants of Winnipeg and many small shipments have recently been invoiced by persons to friends in the United States, commonly at about 57¢ per pound, smoked.

Carp: This fish is now taken in commercial fishing operations in the Southern part of Lake Winnipeg. The growth is more rapid than the majority of Manitoba fishes and specimens have been reported up to 40 pounds in weight. In Manitoba, the fish has appeared in quantities only of late and its true value commercially has not yet been estimated. Some carp fillets are now being exported, so that its importance may become greater this year.

Catfish: These are found in various streams of Southern Manitoba and reach a weight of some 30 pounds. It is, however, not abundant enough to be of great commercial importance. Approximately 15,000 pounds of channel catfish are produced annually and 30,000 pounds of the bullheads. The channel cat and bullhead are the most commonly known species. Export prices are around 23¢ a pound for dressed and headless.

Grayling: The grayling is not a very important fish of commerce in Manitoba, but it offers especially fine sport for fishermen. In this province, it is limited to the extreme northern streams, the Churchill River, its tributaries and three or four others. It is related closely to the trout and resembles it in willingness to take to artificial fly and in its fighting ability. In Northern Manitoba, August and September are the best months for fishing.

Arctic Charr (Trout, Hudson Bay Salmon): This fine fish rarely finds its way into Manitoba commercial fishing below the Hudson Bay Region, around the Churchill River. Its value is chiefly to the Eskimos and northern trappers. The average weight is about 7 pounds and the maximum size 20 pounds.

## HANDLING TO WINNIPEG MARKETING

Getting to Winnipeg, Marketing Centre: The great bulk of the Province of Manitoba's summer fishing passes through the Winnipeg River port of Selkirk, enroute to this city. In winter, fish are frozen on the ice by nature, while in summer and fall this is done in public cold storages of Winnipeg, and a few private plants. During the winter, tractor trains pull the cargos to railheads, but sometimes, as in March of the fishing year 1945/46, unusually mild weather made the ice too soft to permit transportation by tractor or sleigh. Four tractors were lost and two drivers drowned in trying to get to fishing stations on Reindeer Lake, where fishermen had stored between three and four thousand boxes of the winter catch of 100 pounds each. The tractors went into 100 feet of water and could not be salvaged. On Southern Indian lake there were between 150,000 and 200,000 pounds which the fishing companies were unable to get out. Then airplanes went to work. Private government planes were too small, and were supplemented by five larger private aircraft. Most of the fish was brought out in time to realize on it.

Marketing: The system of marketing the product in Manitoba causes the fish to pass through several hands before it is finally exported. The fisherman usually sells to producer or packer on the lake. The packer in turn sells to a wholesale dealer in Winnipeg and the wholesale dealer exports to the United States. This system while apparently convenient perhaps does not lend itself to the production of the best quality product.

In the past a few individuals have shipped direct to the United States but this practice has never grown to any large proportions. "This", says the Manitoba Bureau of Fisheries, "may be due to unscrupulous operators south of the border who occasionally receive the fish from fishermen and by claiming the fish to be of poor quality make serious dockages. This occasionally reduces the return received by the fishermen to less than that of the local market. The Department of Trade and Commerce at Ottawa is of great assistance to small exporters as they usually have knowledge of the reliability of the different importing firms. The services of this Ottawa Department, however, are very seldom used by small exporters."

Most sales are made by telephone and telegraph contacts. Customers occasionally visit the Winnipeg dealers, and the dealers sometimes visit the United States trade, chiefly in the interests of good will. All but ten percent, or less was sold to the United States markets. Prices on the many different forms and varieties ranged all the way up from 3½¢ a pound, f.o.b. Winnipeg for frozen mull ts to 33¢ for whitefish fillets, 42¢ for red spring salmon, 47¢ for yellow fillets, 50¢ for pickerel fillets, to 57¢ a pound for smoked goldeye. Lake Winnipeg whitefish and goldeyes, and now pickerel fillets have become famous products and are on the menu of better restaurants, hotels and clubs in New York and the larger eastern centers.

LICENSING, ENFORCEMENT  
AND INSPECTION

The License System: In order to regulate the fishing industry and to protect the resource a system of licensing of fishermen and fish dealers was developed. The licensing system, in addition to controlling production, also brings revenue to the Government. It does not, however, at present license fees, pay for the cost of administration.

Some of the fishing licenses issued by the Department confer considerable monetary benefit on the holder. In the summer whitefish operation on Lake Winnipeg and in the fall fishing season on Lake Winnipegosis it is not unusual for fishermen to clear \$2,000 or more during six to eight weeks of fishing. This necessarily makes these licenses very desirable to the fishermen and there are always many more applicants for licenses than there are licenses to issue. A system of selection has been built up whereby the seniority of the fishermen is the principal element in issuing the license. In order to still further spread the benefits of these two seasons the full licenses were in some cases split and made into joint licenses so that two fishermen were enabled to share, in part, the prosperity arising from fishing. These joint licenses were, of course, issued to junior fishermen. On Lake Winnipegosis there is a still further junior operation inasmuch as 43 skiff fishing licenses are issued. Thus a beginner on Lake Winnipegosis is issued a skiff fishing license. If he is to be promoted he graduates to a half license and should the time come when he is to be still further promoted he would be given a full license.

During the 1945/46 fishing season the Fisheries Division under the Ministry of Mines and Natural Resources, issued some 3,700 commercial fishing licenses. These varied in cost from \$2.50 for coarse fish to \$25.00 each for summer whitefish licenses on Lake Winnipeg and netted the government only some \$35,000 in revenue therefor. A limit to the catch was set on many of these licenses, by season and respective lake. These ranged from a limit per license of 1,000 pounds of sturgeon on Winnipeg River to, for instance, 5,000,000 pounds for all of Lake Winnipegosis on 600 licenses for whitefish and pickerel, and dependent also on the seasons. The holder of a license was expressly restricted to a specific yardage of nets and size of mesh. In other cases no limit was set on the catch. This was true, for instance, on the winter catch of whitefish, pickerel and sauger in Lake Winnipeg.

In order to make sure that all fishermen are properly licensed and that where the license is limited as to production the licensee does not take more than his allotted share, fishery inspectors have been appointed to check these matters and to enforce the Fishery Regulations in general. In the summer fishing operations the Fishery Inspector uses a patrol boat for moving from place to place or in the smaller waters a canoe and outboard engine. In the winter time to cover the large areas he has the use of a snowplane or snowmobile.

The Fishery Inspector or Fishery Guardian has to have a very thorough knowledge of the fishing industry in order to properly carry out his duties. He has more often than not been a commercial fisherman himself. In addition to checking the production, he also has to be familiar with fishing gear and

has to check up on the sizes of gill nets used to see that they conform with the Fishery Regulations.

Inspection: Fisheries Branch is governed by legislation of a very complicated nature. In the first place the constitution of Canada placed the regulation and legislation for fisheries within the exclusive jurisdiction of the Dominion Government. Thus, while fish are in the water, while they are being taken in commercial fishing operations, and while they are in the vicinity of the fishery, they are under the jurisdiction of the Dominion Government. When, however, fish pass into the channels of trade and leave the fishery vicinities, they are under the exclusive jurisdiction of the Provincial Government. To overcome this complicated legal situation the fisheries of the Province are administered under the Dominion Statute - The Fisheries Act 1932 - by the Special Fishery Regulations for the Province of Manitoba. These regulations are made by the Dominion Government at Ottawa and changes therein to meet changing conditions are put forward by the Manitoba Government. This is because under the Natural Resources Act of 1930 the fisheries, together with other natural resources, passed from Dominion to Provincial control. In order to meet the difficulty of regulating the fish business when fish had passed from the Dominion to Provincial jurisdiction the Fish Dealers Act was enacted in 1942. This is a Manitoba statute and provides regulations for fish dealers.

Another Act which now directly concerns the fishing industry in Manitoba is the Fish Inspection Act, - a Dominion statute. This legislation was adopted by the Province and is now a provincial law. Under this Act the Whitefish Inspection Regulations for the Provinces of Manitoba, Saskatchewan, Alberta and the North-West Territories have been made. These regulations govern the quality of whitefish produced in the province

Parasites, and Handling of Infested Fish: There is one parasite occurring in whitefish and tullibee which is of economic importance inasmuch as the highly parasitized fish of these species are excluded by the Pure Food Laws from entry into the United States. The particular parasite is Triaenophorus crasus. Considerable investigation has been made into the life history of this parasite by Professor Wardle and in the last few years Dr. R. B. Miller of the University of Alberta has carried on very extensive research into its life history.

In October, 1944 eight Manitoba lakes were closed because of unsatisfactory conditions of the whitefish - lakes Armstrong, Cormorant, Island, Kississing, McKnight, Paint, Reed and Temping. Surveys were made and tests taken of all the lakes.

In February, 1946 the United States District Attorney's Office at St. Paul, Minnesota, filed libels asking condemnation of more than eighty-nine tons of Canadian whitefish held in a neighboring town. Similar action was taken against ninety-three tons of fish received from Winnipeg at Duluth. The District Attorney's office said the United States Food and Drug Administration alleged the fish to be worm-infested (by Triaenophorus crasus).

## FISH CULTURE IN MANITOBA

Hatcheries: In common with the effort generally made in North American waters to assist nature in replenishing stocks of desirable commercial fishes, the Province of Manitoba is operating five fish hatcheries and a spawn taking camp. Four of these hatcheries are devoted to the improvement of commercially fished waters and the fifth is given entirely to the production of game and sport fishes. The hatcheries on the commercially fished waters are located on Lakes Winnipeg, Winnipegosis and Manitoba. At Dauphin River, in Sturgeon Bay on the west shore of Lake Winnipeg, is situated the whitefish hatchery. Pickerel hatcheries are located at Swan Creek on the east side of Lake Manitoba, at Ebb and Flow on the west side of the same lake and at Duck Bay fifty-five miles north of the town of Winnipegosis. The whitefish hatchery begins operations in October and the last of the whitefish hatch is usually distributed early in June. A refrigeration plant is operated at Dauphin River to cool the river water and retard the hatch so that the eggs in the hatchery hatch at about the same temperature as the eggs which are naturally deposited in Lake Winnipeg.

The pickerel hatcheries operate from about mid-April until the end of May, as the pickerel is a spring spawning fish. Part of the production of the Swan Creek Hatchery is taken for distribution to sport fishing lakes throughout the province. This has been going on since the second year of operation of the hatchery and there have been gratifying reports received from time to time of the results of pickerel fry distribution.

The sport fish hatchery is located on the extreme northern end of West Hawk Lake. In the hatchery, lake trout, speckled trout, brown trout and rainbow trout eggs are incubated and the fry reared to the fingerling stage. The lake trout eggs handled in the hatchery are collected at Clearwater Lake north of the Pas and the other species of trout are imported from commercial trout hatcheries in the United States. The sport fish hatchery has only been in operation since 1943 and it is too early to look for any general results. However, two year trout have been taken from the small pond at the hatchery and two reports of brown trout being taken by anglers in West Hawk Lake have been received.

### SUMMARY OF PRODUCTION AT FISH CULTURE ESTABLISHMENTS:

Lake Winnipeg (1945/46):

Whitefish Hatchery (Dauphin River) distributed  
in Sturgeon Bay, of Lake Winnipeg 4,620,000 eyed  
whitefish eggs.

Pickerel Hatcheries - unknown quantity of pickerel  
fry in same lake.

Lake Winnipegosis (1945/46):

Duck Bay Hatchery - distributed in Lake Winnipegosis, in vicinity of Duck Bay 51,694,000 pickerel fry.

Lake Manitoba (1945/46):

Ebb and Flow Hatchery - Distributed in Lake Manitoba, vicinity Ebb and Flow 16,225,000 pickerel fry.

Swan Creek Hatchery - Distributed in Lake Manitoba, vicinity Swan Creek 63,290,000 pickerel fry.

Distributed in sport fishing lakes 3,560,000 pickerel fry.

|                                                         |                              |
|---------------------------------------------------------|------------------------------|
| Shipped to State of North Dakota in exchange for large- |                              |
| mouth black bass fingerlings                            | 8,160,000 eyed pickerel eggs |

|                                   |                 |
|-----------------------------------|-----------------|
| Shipped to Spring Grove, Illinois |                 |
| in exchange for rainbow trout     |                 |
| eggs                              | 4,080,000 " " " |

|                              |                        |
|------------------------------|------------------------|
| Distributed in The Pas River |                        |
| Northern Manitoba            | <u>1,360,000</u> " " " |

|                                          |            |
|------------------------------------------|------------|
| Total distribution (Swan Creek Hatchery) | 80,450,000 |
|------------------------------------------|------------|

|                                             |             |
|---------------------------------------------|-------------|
| Total distribution - pickerel and whitefish | 152,989,000 |
|---------------------------------------------|-------------|

One more, the Whiteshell Trout Hatchery, distributed 409,523 fingerling and 2,007 yearling trout (speckled, brown lake and rainbow) and sent 100,000 eggs to the State of Washington. It also distributed 1,180,000 pickerel fry.

The Clearwater Spawntaking Camp shipped 643 adult lake trout to parks, 31,000,000 whitefish eggs to the Dauphin River Hatchery and 1,000,000 trout eggs to the Whiteshell Trout Hatchery.

Transfers: In addition to the hatchery work a transfer of adult lake trout has been successfully made. The adult fish were taken in Clearwater Lake and brought by train and truck to Clear Lake in Riding Mountain National Park and to Laurie, Glad and Childs Lake in the Duck Mountain. The success of this work has been proved in Clear Lake where lake trout are regularly taken during fishery investigation and where one or two anglers have taken lake trout. This transfer of adults may be successfully applied to other species in particular perch, as it is very easy to secure quantities of perch and transfer them to some of the smaller lakes which have no sport fish at the present time.

Exchanges with the United States: Another phase of fish culture is the yearly exchange of fish cultural products between the Province of Manitoba and the State of North Dakota. The Province of Manitoba having an abundance of pickerel eggs, supplies the State of North Dakota with from 5 to 10 million eyed eggs of this species annually. The State of North Dakota

having a fair abundance of largemouth black bass supplies the Province of Manitoba with, from 4 to 8,000 largemouth black bass fingerlings each fall. This most admirable cooperation has resulted in at least one lake in Manitoba being a producer of largemouth black bass. This is Lake Minnewashta, near Morden.

#### CURRENT NOTES ON COMMERCIAL FISHING

Production in January 1947: According to the MONTHLY REVIEW OF CANADIAN FISHERIES STATISTICS, the commercial catch for Manitoba during the month of January, 1947 amounted to 5,255,900 pounds with a value to fishermen of \$606,238 (Canadian dollar on a par with the United States dollar).

Anticipated Difficulties with the United States Market: In the face of the heavy production, which is considerably greater than that of last year, some factors appear which promise difficulty in marketing. As the Winnipeg Tribune puts it, "the finish of meat rationing in the United States has hit Western Canada's flourishing wartime export fish business to an extent where the Prairie Provinces (Manitoba, Saskatchewan and Alberta) are now competing against each other for their share in a restricted market." Winnipeg dealers agree that the situation has been transformed this winter from a seller's market to a buyer's market.

Saskatchewan's filletting plants came into operation toward the end of a period of lavish export trade and are continuing to seek material to process. Manitoba Government policies have also been expansionist through the opening up of Reindeer, South Indian, God's and numerous smaller lakes in the north. Commercial fishing has been carried on there for three or four years, all through the time of heavy exports when American consumers were forced to turn to substitutes for meat. Government fishery officials state that the change - foreshadowed when meat rationing stopped last fall - is having a serious effect on Western Canadian fish business. As one Winnipeg dealer explained, American buyers were no longer ordering all the whitefish they could get from Western Canada as soon as winter's catch came down from the north. They preferred to hold off, thereby saving storage charges and figuring they could get all they wanted later on. Actually, little Manitoba whitefish is being exported to the United States at present. There are few orders. Dealers expect the situation to change shortly but prices are expected to be substantially lower than last year when medium whitefish brought around 17¢ or 18¢ a pound on the American market. Now they look for a drop of from 5¢ to 6¢ in those prices. As another dealer put it, "the market is simply backing away from the high prices we were getting."

Factors which have Enabled the Canadian Fisheries to Compete in United States Market: During the war the American market could absorb all the fish which could be obtained, but, before that time and subsequently, three main factors had enabled Canadian fishermen to compete with American fishing:

Lower labor costs in Canada;

Canadian fishermen, generally speaking, being much nearer to fishing grounds than United States fishermen;

A reciprocity treaty operative since 1939 by which Canada can ship about 15,000,000 pounds of fresh and frozen fish into the United States under a preferential tariff. After that she pays the full duty rate.

# RECENT AIR TRANSPORTATION OF FISH

(This information, dated February 3, 1947, from a field clerk, was submitted by Mr. G. W. Malaher, Acting Director of Game and Fisheries of Manitoba to illustrate air transportation for the purpose of this report.)

The following are the names of the lakes from which fresh fish have been flown out, and the approximate poundage, value to fishermen and market value:

|                 |                    |
|-----------------|--------------------|
| Barrington Lake | 23,000 lbs.        |
| Notigi Lake     | 12,000 lbs.        |
| Sissipuk Lake   | <u>15,000 lbs.</u> |

50,000 lbs.

Value to fishermen - approximately \$5,000.00

Value as marketed - approximately \$9,000.00

Distances to air bases:

|                               |   |                          |
|-------------------------------|---|--------------------------|
| Barrington Lake to Kississing | - | approximately 140 miles. |
| Notigi Lake to Kississing     | - | " 110 "                  |
| Sissipuk Lake to Kississing   | - | " 60 "                   |
| Sissipuk Lake to Channing     | - | " 75 "                   |

It is expected that fish from two or three small lakes will be flown out this winter, but to date none have come out.

Operators of aircraft in this district are as follows, showing location of airbase:

|                           |   |                                                  |
|---------------------------|---|--------------------------------------------------|
| C. P. Airlines            | - | Channing & Kississing                            |
| Johannson Flying Services |   | Channing                                         |
| Paul Sigurdson            | - | Channing - at present using<br>Manistikwan Lake. |
| Thos. Lamb                | - | The Pas & Wabowden                               |
| Keystone Fisheries        | - | The Pas & Sheridon                               |

At each of these points are docks, and hangars at Channing, Wabowden, and Grace Lake, at The Pas. A summer base at Douglas Lake near Flin Flon has two docks.

There is no refrigeration for fresh fish. In winter it is not necessary. Both summer and winter, the fish are flown in sacks, and packed at the packing station at whichever point the plane is landed.

There is very little summer flying of fresh fish in The Pas district. Only two lakes were solely dependent on aerial transport, Barrier and Suwannee Lakes. Production and values of these two lakes are as follows:

|               | <u>Poundage</u> | <u>Value to<br/>Fishermen</u> | <u>Market Value</u> |
|---------------|-----------------|-------------------------------|---------------------|
| Barrier Lake  | 115,227         | \$ 9,599.17                   | \$ 16,460.91        |
| Suwannee Lake | 28,980          | 3,087.80                      | 7,245.00            |

The expansion of air transportation depends largely on the market value of fish, and the latter, of course, is beyond control.

More fish is flown on the Saskatchewan side of Flin Flon. At the present time fresh fish is being flown out of Reindeer Lake, and is flown from that lake during the summer, as well as a number of other lakes in the Flin Flon vicinity.

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